

National Aeronautics and  
Space Administration



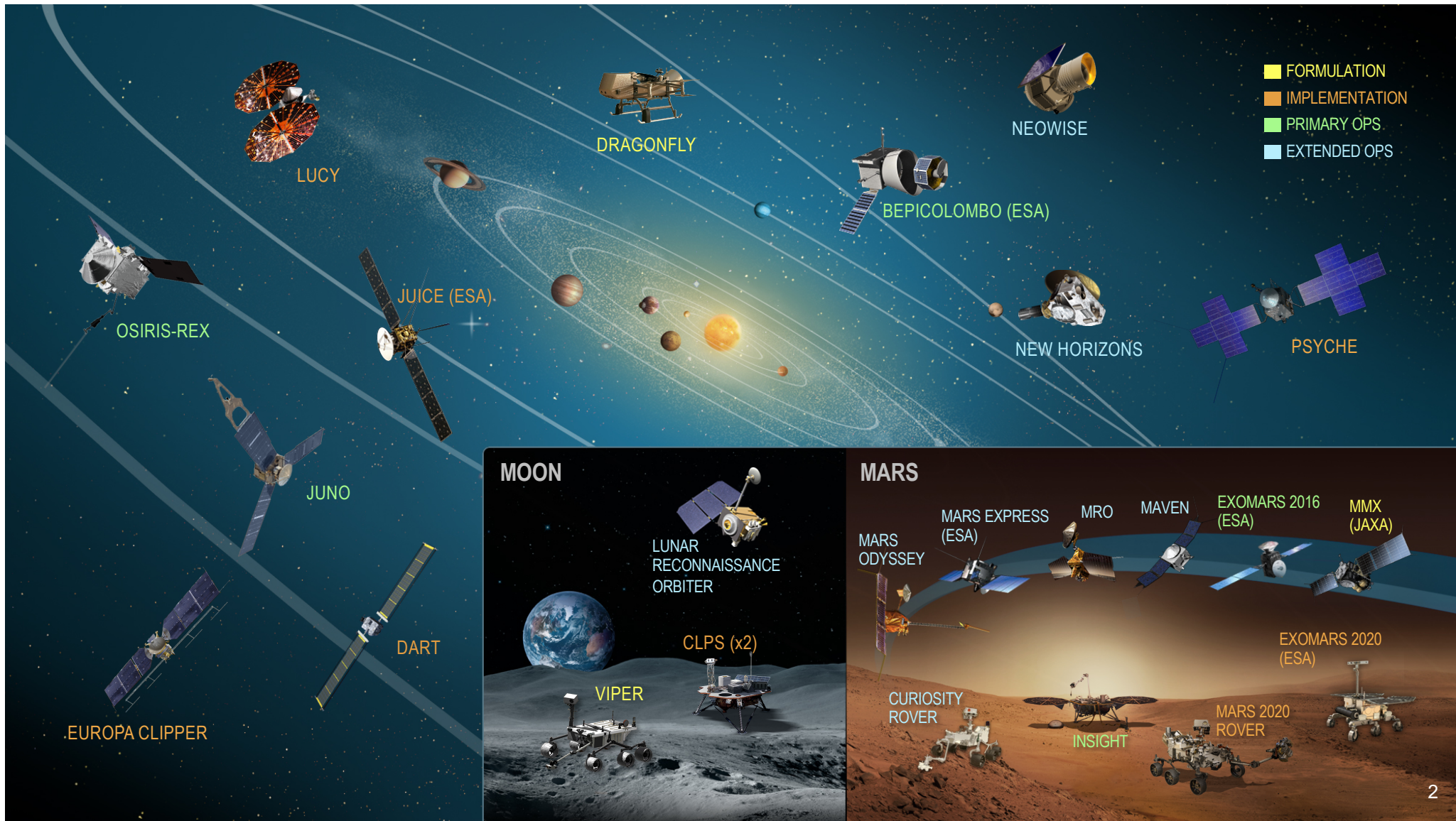
# EXPLORE SCIENCE

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Planetary Science Division Director  
PAC Meeting

December 6, 2019





# Mars Sample Return (MSR) Status

- Decadal MidTerm recommended that NASA continue planning and begin implementation of proposed MSR architecture
- Throughout 2018 / 2019: NASA/ESA have been converging campaign requirements, completing mission trade studies, refining mission concept designs, and maturing plans for jointly implementing MSR, potentially launching as early as 2026
- On April 26, 2018: NASA and ESA signed a Joint Statement of Intent (SOI) at the Berlin Airshow to jointly develop plans for MSR by the end of 2019
- In July 2019, NASA conducted an Acquisition Strategy Meeting for MSR and ESA released an Invitation to Tender (ITT) for an Earth Return Orbiter (ERO)
- Studies have prepared NASA and ESA to make an informed decision on MSR late 2019 / early 2020
- On Nov 28, the ESA Ministerial Council approved and funded their planned role in MSR

# Announcements of Opportunity

## Small Innovative Missions for Planetary Exploration (SIMPLEx)

- Three missions selected for Phase A/B development
- Currently capturing lessons learned through PDR for consideration during next cycle
- Release of next opportunity planned for NET June 2020

## New Frontiers #4

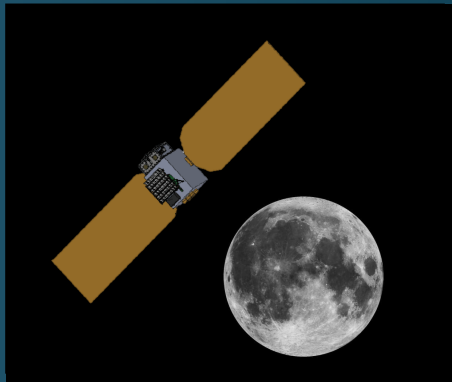
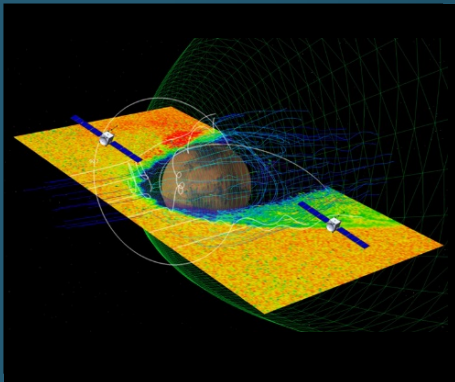
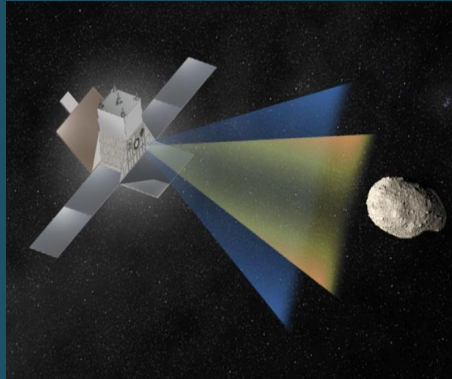
- Dragonfly selection announced June 27, 2019

## New Frontiers #5

- To be released Fall 2022 (current schedule)

## Discovery 2019

- Step-1 proposals were due July 1, 2019, with selections scheduled for January 2020
- Step-2 selections planned for NET April 2021
- Dr. Tom Wagner named Lead Program Scientist for the Discovery Program







# Exoplanet Research Program (XRP)

## Changes to the program in ROSES19:

- HPD and ESD joined the program
- Review managed collaboratively by all four divisions
- Selections are funding-blind (i.e., not tied to specific Divisions)
- 20 percent more proposals than last year!

## Anticipated changes coming in ROSES20:

- Consolidation of exoplanet proposals into XRP
  - Within APD: exoplanet-related proposals from ADAP, ATP, etc. will move into XRP
  - Within PSD: exoplanet proposals in HW may move into XRP (better definition of the line between the two)
- Encourage further cross-divisional collaboration (HPD and ESD participation, in particular)



#### PROGRAM NEWS

### ROSES-19 Amendment 8: Interdisciplinary Consortia for Astrobiology Research (ICAR)

## Astrobiology Research

- Solicitation: NNH19ZDA001N-ICAR
- Targeted timing:
  - First Solicitation -- Released November 25, 2019
  - January 31, 2020 -- Step 1 proposals due
  - April 3, 2020 -- Step 2 proposals due
  - Fall 2020 -- new ICAR awards start
- Areas of research emphasis in this solicitation are linked to Research Coordination Network (RCN) topics:
  1. Exoplanet System Science - NExSS
  2. Prebiotic Chemistry and Early Earth Environments - PCE<sub>3</sub>
  3. Earliest Cells and Multicellularity
- Selected proposals will become part of the RCN
- Calls will occur on the order of every two years, and will stagger RCN topics that will be included.



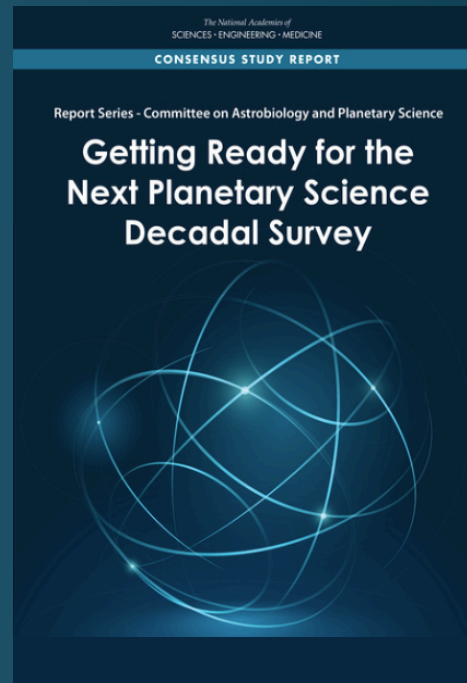
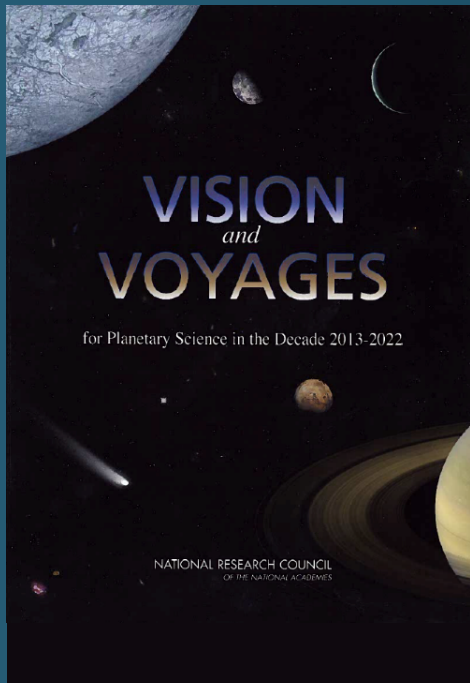
# RFI: Research that Falls in a Gap between Current SMD Solicitations

Released: Dec 2, 2019 (Solicitation: NNH20ZDA003L)

Response Date: Jan 31, 2020

- The NASA Science Mission Directorate is soliciting information on research that is aligned with the agency mission and SMD's Science Plan but falls in a gap between current solicitations, possibly because it is interdisciplinary or interdivisional.
- Responses will be used by NASA to inform a decision as to whether the portfolio of current program elements in ROSES needs to be modified and/or expanded to provide the proper avenue for such research.
- Full text of the RFI and response instructions on NSPIRES





## Preparing for the Next Decadal Survey

- Planetary Mission Concept Studies (PMCS) proposals were due May 31, 2019
- Proposals were assessed by peer review panels this summer
  - 54 proposals received
  - 11 selected
- Results from concept study reports will be submitted to National Academy of Sciences (NAS) to be included for consideration by the Decadal Survey
- PSD encourages those not selected to consider submitting a white paper





# White Paper Process

- Led by the NAS Space Studies Board (SSB)
- Format similar to last planetary decadal (NAS website)
- LPI website for community collaborations is OPEN

[https://www.lpi.usra.edu/decadal\\_whitepaper\\_proposals/index.cfm](https://www.lpi.usra.edu/decadal_whitepaper_proposals/index.cfm)

- Upcoming Activities
  - AGU Town Hall with NAS/SSB
    - Scheduled for Dec. 11 at 12:30pm
  - Early Career Workshop/Webinars (Date TBD)
  - LPSC Town Hall led by NAS/SSB
  - PMCS status workshop, informational webinars and face-to-face meetings at LPSC

## Senior Review Subcommittee-related Findings

The PAC finds that the ranked summary of extended mission proposals presented in the SRS Report on Proposals for Mission Extensions for 2019 (Table 1) grouped by adjectival rating accurately reflects the scientific and technological merits and weakness of the proposals. Final selections will need to balance these ratings with overall operational and budgetary constraints.

Based on the proposal and the SRS report, the PAC sees insufficient scientific justification for continuation of NASA Mars Express (MEX) funding. The PAC recommends that Planetary Science Division (PSD) management evaluate whether the operational importance of MEX to NASA's other Mars assets, e.g., its service as a backup relay, justifies continued NASA support.

Unassigned Future Expenses (UFE) were incorporated into the budgets of Mars Reconnaissance Orbiter (MRO) and Mars Science Laboratory (MSL), but not into the budgets for the other four missions under consideration for extension. The PAC finds that NASA should consider establishing a common “UFE pool” available to all extended missions to fund requested overguides that can enhance science and increase mission robustness for missions as needed.

A widely-used common portal for access to all Mars orbital data from all past and present NASA missions is currently supported by the Mars Odyssey Thermal Emission Imaging System (THEMIS) team. The PAC finds that to insure continued widespread access to this website, a multi-Mars mission data service should be supported at the Mars Program level independent of any individual mission.



## Senior Review Subcommittee-related Findings:

### **NASA RESPONSE**

- ✓ NASA thanks the PAC and the Senior Review Subcommittee for their findings. We are in the process of notifying the teams regarding extended mission decisions that are responsive to the committee's assessment and the needs of our community. NASA will provide additional information through the standard public platforms and email lists.
- ✓ Ref: Following Presentation by Bill Knopf
- ✓ In addition, NASA is taking the UFE finding into consideration.
- ✓ As for the Mars orbital data website, we are incorporating this finding into a broader effort to understand the planetary community data access ecosystem, which includes PDS, JMARS, TREX, etc.

## NASA Travel Restrictions on Mission-Funded Contractors

Present restrictions on NASA mission-funded contractor travel reduce the effectiveness of collaboration and dissemination of results from NASA missions and increase costs to those missions. The PAC finds that NASA should reevaluate the guidelines for contractor travel to international conferences and NASA-sponsored meetings on project funds.

### **NASA RESPONSE**

- ✓ NASA, SMD, and PSD are working with the Office of the Chief Scientist to reduce foreign conference travel restrictions on NASA contractors.



## NEOCam Finding

The PAC is glad to see progress on bringing to fruition a space-based infrared survey telescope to discover hazardous NEOs, as recommended in a recent National Academy of Sciences (NAS) report. However, the PAC is concerned that the change from the PI-led NEOCam mission to a directed mission carries significant risk of insufficient transfer of scientific and technical information. Despite the fact that the motivations of the directed mission will not be primarily scientific in nature, as is appropriate, scientific leadership did play a critical role in maturing the mission concept to its present state. Moving forward, the scientific leadership and technical knowledge within the NEOCam team will be needed to achieve the directed mission's strategic goals in an effective fashion. The PAC finds that it is vital to honor and utilize the extensive work and preeminent expertise of the NEOCam team. NASA should seek to preserve the role of the NEOCam scientific and technical leadership in the execution of the directed mission. The PAC requests a detailed explanation of the directed mission's leadership plan and structure, when it is available.

## NEOCam Finding

### **NASA RESPONSE**

- ✓ NASA agrees with the need to build on the scientific and technical knowledge developed during the NEOCam Phase A and extended Phase A efforts. As such, NASA is working with our NEOSM concept partners to clarify roles and responsibilities and, once the mission is ready to proceed, ensure Level 1 requirements will be met by the observatory. Going forward, NASA will continue to provide updates on the NEOSM concept progress and plans as part of our regular PSD Division Director or PDCO status briefings to the PAC.

## RECOMMENDATION:

### Mars Sample Return Ground Element Coordination

**Recommendation:** The PAC recommends that the Mars Program engage the Curation and Analysis Planning Team for Extraterrestrial Materials (CAPTEM) in the process for planning any future sampling activity at Mars.

**Major Reasons for the Recommendation:** The Mars Program has put considerable thought and effort into understanding how to implement the ground element of Mars Sample Return. The Mars Program has done an excellent job collecting input from the Mars science community (via the Mars Exploration Analysis Group, MEPAG) and its European Space Agency (ESA) partners, yet at the same time, the sample science community, CAPTEM, also has extensive relevant experience and expertise to offer on this topic. The Mars science community and the sample science community appear to be working in parallel, and it would be more efficient and beneficial to the process if these groups worked together to approach this important problem.

**Consequences of No-Action on the Recommendation:** Maintaining the status quo constitutes a duplication of effort and inefficient use of resources.



## RECOMMENDATION: Mars Sample Return Ground Element Coordination

### **NASA RESPONSE**

- ✓ One of the findings of the NASA/ESA MRS Sample Planning Group (MSPG), of which JSC curation had been involved, was the need to tightly coordinate the curation, planetary protection, and science involved in Mars sample return.
- ✓ It is the intention, once the MSR is in formulation, that a MSPG follow-on group, having representatives from planetary protection, curation, and the sample-science community (including CAPTEM), will be formed to do much of the ground work to inform an international Operational Readiness Definition Team that will develop potential requirements for a sample receiving facility.



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